

# EUROPEAN PATENT OFFICE

## Patent Abstracts of Japan

PUBLICATION NUMBER : 60065968  
PUBLICATION DATE : 15-04-85

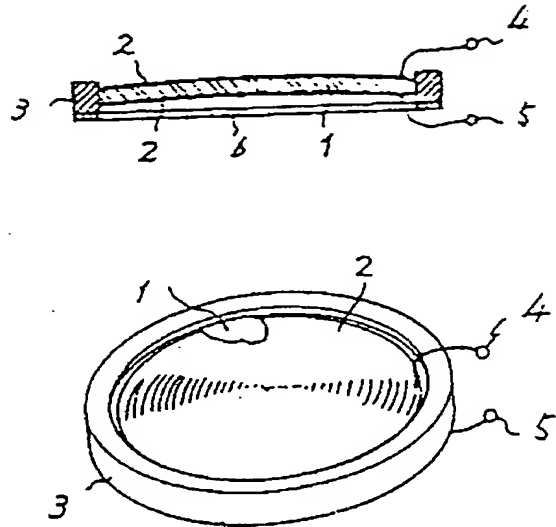
APPLICATION DATE : 16-09-83  
APPLICATION NUMBER : 58169367

APPLICANT : HITACHI MAXELL LTD;

INVENTOR : KUMADA AKIO;

INT.CL. : F16K 31/02

TITLE : CURVED PIEZO-ELECTRIC  
ACTUATOR



ABSTRACT : PURPOSE: To provide a high-sensitive actuator of simple structure by curving a piezo-electric thin plate having electrodes on both inside and outside thereof, fitting the outer peripheral portion to a frame and applying voltage across the electrodes to displace the piezo-electric thin plate vertically.

CONSTITUTION: A polarized piezo-electric ceramic plate 1 having electrodes 2 on both inside and outside thereof is deformed like a partial spherical shell having a designated radius of curvature. The outer peripheral portion of the piezo-electric ceramic plate 1 is fitted to a stainless steel ring 3, and lead wires 4, 5 are soldered to the peripheral portions of both electrodes 2. A stainless steel disc 6 is adhered from the concave surface side of the piezo-electric ceramic plate 1 to form a curved piezo-electric actuator. In this arrangement, when voltage is applied across the lead wires 4, 5, the piezo-electric ceramic plate 1 is vertically deformed, so that large displacement can be accomplished at a comparatively low potential.

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